Patrick Vegetation Management Project

Invasive Plants Report

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For:
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South Zone Wallowa-Whitman National Forest

07/10/2019

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Introduction

This report addresses the existing conditions and the potential effects of the Patrick Vegetation Management Project (Patrick) as it pertains to non-native (invasive) species. Invasive species are defined as a non-native species whose introduction causes or is likely to cause economic, environmental, or human health harm. An invasive species is distinguished from other non-natives by their ability to spread in native ecosystems. "Noxious weeds" on the other hand, is a legal term used by state, county, and federal agencies to denote plants that pose particular threats, generally to agriculture. Many undesirable non-natives can be invasive and pose threats to healthy native ecosystems but do not meet the criteria for listing as a "noxious weed." For that reason, this analysis will focus on all invasive non-native species and not just those listed as "noxious weeds."

The proposed activities that will be analyzed are those that cause ground disturbance including ground-based harvest operations, machine thinning, temporary road construction, and prescribed fire. These combined with a decrease in forest cover offer the most notable effects on invasive plant status.

The only comment from our scoping efforts was a request to analyze the purported benefits of the treatment weighed against the negative impacts to invasive weed spread from temporary road building and road reconstruction.

Relevant Laws, Regulations, and Policy

Regulatory Framework

Land and Resource Management Plan

The Pacific Northwest Region Invasive Plant Program Record of Decision (ROD) (USDA 2005) amended the Forest Plan (amendment #RF-5) for the Wallowa-Whitman National Forest in 2005. The Region 6 ROD outlined 23 standards for the prevention and management of invasive plants that have been added to all regional forest plans and require consideration of invasive species in all planning efforts. The regional ROD does not however, approve any site-specific treatment, instead requires a completed analysis by each National Forest (see the specific sections below for the specific analysis).

Of the 23 prevention and management standards in the regional ROD, only seven directly affect activities found in Patrick. These standards are:

- Prevention of invasive plant introduction, establishment and spread will be addressed in watershed analysis; roads analysis…..vegetation management plans, and other land management assessments.
- Actions conducted or authorized by written permit by the Forest Service that will operate outside the limits of the road prism, require the cleaning of all equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) prior to entering National Forest System Lands.
- Use weed-free straw and mulch for all projects, conducted or authorized by the Forest Service, on National Forest System Lands.
- Use only gravel, fill, sand, and rock that are judged to be weed free by District or Forest weed specialists.
- Conduct road blading, brushing and ditch cleaning in areas with high concentrations of invasive plants in consultation with District or Forest-level invasive plant specialists.

- Develop a long-term site strategy for restoring/re-vegetating invasive plant sites prior to treatment (if invasive plant treatment is needed prior to project activities as a prevention measure).
- Native plant materials are the first choice in re-vegetation for restoration and rehabilitation where timely natural regeneration of native plant community is not likely to occur.

In 2010 the Wallowa-Whitman National Forest Invasive Species Plan ROD was signed. This decision authorized the treatment of invasive species on specific sites on the forest. This decision created the ability to conduct Early Detection Rapid Response (EDRR) on newly discovered sites. The ability to respond to new spread or establishment of invasive species has given the Forest Service a tool that should help reduce the spread and establishment of invasive species by about one-half of the previous rate. The following are recommended mitigation measures and monitoring prescriptions.

- Project personnel would inform invasive species personnel pre-seasonally annually of upcoming project activities (i.e. ground disturbing activities), so reprioritization of treatment (if deemed necessary) and inventory can begin prior to the start of project activities.
- New infestations would be inventoried and managed under early detection rapid response (EDRR) guidelines.
- To reduce the potential spread from known invasive plant sites, these occurrences would be identified as Areas-To-Avoid for moderate to high-risk ground disturbance activities. Coordination will occur with invasive species specialists for exceptions.
- All landings and skid trails with soil disturbance evident would be rehabilitated and seeded with an approved native seed mix after completion of project activities on those sites.

Desired Condition

The desired condition stated in the Wallowa-Whitman National Forest Invasive Treatment FEIS is to maintain or improve the diversity, function, and sustainability of desired native plant communities and other natural resources that can be adversely impacted by invasive plant species.

Federal Law

The Federal Noxious Weed Act of 1974, as amended (7 U.S.C 2801 et seq.) requires cooperation with State, local, and other Federal agencies in the application and enforcement of all laws and regulations relating to management and control of noxious weeds.

The U.S. Forest Service Manual 2080 directs the Forest Service to use an integrated weed management approach to control and contain the spread of noxious weeds on National Forest System (NFS) lands and from NFS lands to adjacent lands.

Executive Orders

Executive Order 13112 (1999) directs federal agencies to reduce the spread of invasive plants.

State and Local Law

ORS Chapter 569 (2017) states that the federal government should cooperate with individual owners in the control and eradication of noxious weed pests. In Baker County it is required that landowners manage weeds named on their noxious weed list.

Other Guidance or Recommendations

Under the National Strategy and Implementation Plan for Invasive Species Management (2004), the Chief of the USFS identified invasive species as one of the four significant threats to our Nation's forests and rangeland ecosystems. The goal of this plan was to reduce, minimize, or eliminate the potential for introduction, establishment, spread, and impact of invasive species across all landscapes and ownership. Four strategic elements were described: prevention, EDRR, control and management, and rehabilitation/restoration.

Topics and Issues Addressed in This Analysis

Resource Indicators and Measures

Several factors such as type of disturbance, proximity to propagule source, and size or magnitude of disturbance can increase the propensity for invasion of an otherwise healthy native plant community by invasives (Mack & D' Antonio 1998, Lockwood et al. 2005). Potential for establishment and potential for spread are the two indicators used to analyze the effects of implementing the alternatives on invasive species spread in this report. Differences between alternatives will be displayed by comparing the potential change in the indicators from the existing conditions.

While direct/indirect effects on the potential establishment of invasive plants are difficult to predict and quantify, they would occur through ground disturbance and introduction of invaders into new areas. Disturbance is defined as a punctuated event or series of events that kill or damage existing organisms, directly or in-directly increase resource availability, and create an opportunity for new individuals to become established (Sousa 1984). Disturbance associated with vegetation management activities are expected through movement of heavy equipment, soil displacement, and vegetation compression; but the amount of disturbance can vary depending on activity density and type. Project activities can introduce new species into areas by transporting invasive plant material on machinery or personnel. Increased disturbance and access would increase the potential for new establishment of invasive species in sites previously unoccupied. Wildfire suppression would also have the potential to increase the risk of establishment of invasive species but predicting wildfire occurrence is problematic.

The potential spread of invasive plants is also difficult to predict and quantify; however, it would occur through ground disturbance and the possible increase in "invasibility" or reduction in competition from native species after disturbance. Increased disturbance and pre-existing invasive sites in the vicinity of project activities would increase the potential for spread of invasive species. Wildfire and the activity involved in suppression would also increase the risk of spread of invasive species but predicting wildfire occurrence is problematic. Large scale and intense wildfire disturbance would create ideal areas for the introduction and spread of invasive plants. With increasing numbers of wildfires, the numbers of invasive species could increase (Merriam, et al., 2006), with the largest increases found in those areas with pre-existing invasive plant populations (Zouhar, et al. 2008).

Table 1. Resource indicators and measures for assessing effects

Resource Element	Resource Indicator	Measure
Ground disturbance	potential to establish	Acres of ground-based logging
Ground disturbance	potential to establish	Miles of temporary roads
Invasive seed source	potential to spread	Acres of invasive plant inventory in unit
Ground disturbance	potential to establish	Acres of mechanical treatments

Ground disturbance/ competition disruption	potential to establish	Acres of prescribed burning
Ground disturbance	potential to establish	Acres of grapple/landing pile burning

Methodology

The potential for each of the proposed activities to increase the establishment and spread of invasive species is described using the following qualitative scale:

- NO – Project activities have no potential to introduce or spread invasive species.
- LOW – Activities identified as low would create little to no bare soils and have extremely limited potential for the introduction of invasive plant material to the project area. If left untreated, invasive species within these areas would not spread from current locations or expand from current levels at rates higher than those found in the absence of project activities.
- MODERATE – Moderate level activities are those that, with recommended mitigation could be treated and reduced to pre-project levels, but without the implementation of these measures could begin to spread beyond current levels.
- HIGH - A high level activity is one that is very likely to create opportunities for the spread and introduction of invasive species which could not be mitigated with prevention measures. To control a population of invasive species established under high intensity activities would likely require an increase in invasive treatment activities (including herbicide use) and funding to control the infestation.

To analyze the effects of project activities on the potential establishment or spread of invasive species, a qualitative estimate for the potential of the impact has been established for each action. They are based on the amount of ground disturbance proposed, the likelihood of spread of an existing site or new sites being established and the proximity of current invasive species sites. An activity with little new ground disturbance and no known invasive plants in the vicinity would be rated as having a low potential for invasive species establishment while an area that proposes large scale ground disturbance with invasive plants nearby might be rated as a high. Likewise, if an activity would create little to no ground disturbance and there are no known invasive species infestations nearby it would be rated as a "No" potential for spread while activities that propose large scale new ground disturbance with invasive plants on site might be rated as having a high potential for spread.

Information Sources

Information used to support this analysis come from published reports and scientific studies, data records in the NRM database, and from my professional judgement an invasive plant specialist.

Incomplete and Unavailable Information

The historic record of invasive plant inventory and the survey work accomplished in preparation for this report is adequate for this analysis.

Spatial and Temporal Context for Effects Analysis

The following timeframes were used to discuss the direct, indirect and cumulative effects of project implementation on invasive species related to the potential for establishment and spread of invasives:

- Short-term timeframe: 1-3 years. This period of time would be long enough to notice the germination and growth of any new invasive species, or the increase in size of known infestations after project activities.
- Long-term timeframe: 25-30 years. This long-term timeframe was chosen because unforeseeable future projects, demographic changes, etc., make assumptions beyond this timeframe speculative. Direct/Indirect Effects Boundaries.

The spatial boundaries for analyzing the direct and indirect effects to invasive plants is the project area boundary (48,711 acres), including areas where no activities are planned, because the means of this type of effect would take place in the immediate vicinity of disturbance and current invasive plant sites.

Cumulative Effects Boundaries

The spatial boundaries for analyzing the cumulative effects to invasive plants is the North Fork Burnt River Watershed (124,202 acres) because the entire project is contained herein and the means of these types of effects may be transmitted outside the project area boundary but would be mostly limited within the natural physical boundary established by ridges of the watershed.

Affected Environment

Existing Condition

There are 109 inventoried invasive plant sites (15 different species) within the Patrick Project Area totaling 1,100 acres. The inventoried acres within the project area are shown in the table below (Table 1). Acreages reflect current information in the Forest NRM GIS layer (GIS query February 25, 2019). In addition to these listed species the project area also includes *Ventenata dubia, Bromus tectorum*, and others that are potentially harmful invasive species but have not been actively surveyed and recorded at this time. Surveying of forb species was performed in 2016 and 2018 by invasive plant specialists and also in 2018 in conjunction with botany surveys associated with Patrick. In 2018, an ODA invasive plant specialist performed an area wide survey of all tansy ragwort sites. This agreement was funded by the Challenge Cost Share Program. No tansy plants were detected at these inventory sites, however the site is retained in order to periodically monitor the sites. Chickory and Teasel are on Baker County's B List and Common Mullein is on the C List. There are moderate population pockets of these species that have not been recorded because they have been of a lower priority but have been actively treated within inventory sites of other species. The Oxeye Daisy sites were added this season because that species is increasing and climbing on the priority list. Many sites are linear, lying along roads, and in several cases multiple species occur within a single location. Treatment and monitoring records document all site visits by invasive plant specialists, spanning the years since initial discovery and inventory of the site. These records are on file at the Whitman Ranger District Office in Baker City Oregon. These sites are visited on a regular basis for treatment and monitoring and can be relocated and identified on the ground when necessary.

There are 2,116 acres of invasive plant inventory in the North Fork Burnt River Watershed which is the area being considered in the cumulative effects analysis. The species represented in this sample are of a similar variety and concentration as in the project area.

Table 2. Invasive plant inventory in Patrick and Oregon Designations

Scientific Name	Common Name	Gross Acres	Baker County Designation	Oregon State Designation
Cardaria draba	whitetop	80	A	B
Carduus nutans	nodding plumeless thistle	1.5	-	A

Centaurea debeauxii	meadow knapweed	0.1	-	B
Centaurea diffusa	diffuse knapweed	294	A	B
Centaurea maculosa	spotted knapweed	77	A	B (T)
Cirsium arvense	Canada thistle	156	B	B
Convolvulus arvensis	field bindweed	3	-	B
Cynoglossum officinale	gypsyflower	85	-	B
Cytisus scoparius	Scotch broom	0.1	-	B
Hypericum perforatum	common St. Johnswort	40	-	B
Leucanthemum vulgare	oxeye daisy	273	B	-
Linaria dalmatica	Dalmatian toadflax	32	A	B(T)
Onopordum acanthium	Scotch cottonthistle	0.5	A	B
Potentilla recta	sulphur cinquefoil	19	B	B
Senecio jacobaea	stinking willie (tansy ragwort)	38	A	B(T)
Total		**1100**		

Baker County and the Oregon Department of Agriculture (ODA) designate listed invasive species status using a similar system.

"A" designated species – an invasive of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states makes future occurrence in Oregon seem imminent.

Recommended Action: Infestations are subject to intensive control when and where found by Baker County with possible assistance from the Oregon Department of Agriculture.

"B" designated species – an invasive of economic importance which is regionally abundant, but which may have limited distribution in some counties.

Recommended Action: Moderate to intensive control at the county level.

ODA also has "T" designated species, which are a priority noxious weed designated by the Oregon State Weed Board for which the ODA will develop and implement a statewide management plan. "T" designated noxious weeds are species selected from either the state "A" or "B" lists.

Resource Indicator and Measure 1- Potential to establish

Invasive plant establishment occurs during existing conditions due to ground disturbance which occurs in small ways in the project area associated with mining, erosion, uprooted trees, grazing, OHV use, and other human recreational activities. The risk of establishment would continue to increase due to large-scale wildfire as fuels continue to accumulate.

Resource Indicator and Measure 2 – Potential to spread

Invasive plant spread occurs during existing conditions due to weed seeds being spread from local and distant sources by wind, animals, and human movement within and from out of the area.

Environmental Consequences

Alternative 1 – No Action

No project activities (including commercial thinning and prescribed burning) would be authorized under this alternative. All inventoried invasive sites would continue to be managed in accordance with the Wallowa-Whitman Invasive Plant Program EIS (USDA 2010) and the Wallowa-Whitman Forest Plan as amended by Regional Forester Amendment #5 that incorporates the Pacific Northwest Region Preventing and Managing Invasive Plants Record of Decision (USDA 2005).

Resource Indicator and Measure 1- Potential to establish

There would be no direct effects to the establishment potential of invasive species because no activities would be authorized. Many vectors for the establishment of new populations would still exist from on-going recreation and vehicle travel, livestock and big game transport activities within the project area. Over time, with no additional disturbances to known sites, further treatment success, and no reduction to existing desirable vegetation cover and vigor the known sites could be eradicated or significantly reduced. However, without fuel reduction activities within the project area, indirect effects may exist from wildfire. Wildfire suppression activities could increase the risk of establishment of new invasive species through transport of invasive species seeds and material from personnel and equipment. The potential for this impact would be rated as **High** due to the risks of a stand replacing wildfire.

Resource Indicator and Measure 2 – Potential to spread

There would be no direct effects to the spread potential of invasive species because no activity would be authorized; however, as described above, vectors which can spread seeds from known populations would still occur (recreation, vehicle travel, livestock, big game, etc.) within the project area. In the long-term, with no additional disturbances to known sites, further treatment success, and no reduction to existing desirable vegetation cover and vigor the known sites could be eradicated or significantly reduced. Without fuel reduction the indirect effect due to the risk of large-scale wildfire would continue to be an issue in the project area. Ground disturbance from wildfire and the associated suppression activities create ideal situations for the spread of current invasive species sites. The movement of personnel and equipment through existing invasive species sites could allow for an increased rate of spread. Therefore, the potential spread in the event of a wildfire would be **Moderate**.

Table 3. Resource indicators and measures for alternative 1

Resource Element	Resource Indicator	Activity	Measure
Ground disturbance	potential to establish	0 acres of ground based logging	Moderate/ Increased likelihood of large-scale fire
Ground disturbance	potential to establish	0 miles of temporary roads/ however, normal road maintenance would occur	Low
Invasive seed source	potential to spread	1100 acres of invasive plant inventory in project area	Moderate
Ground disturbance	potential to establish	0 acres of mechanical treatments	No
Ground disturbance/ competition disruption	potential to establish	0 acres of prescribed burning / increased potential of large scale uncontrolled wildfire	High/ Likelihood of large-scale fire

Ground disturbance	potential to establish	0 acres of grapple/landing pile burning	No

Alternative 2 – Proposed Action

The proposed action for consists of vegetation treatments including commercial harvest, non-commercial thinning, and associated fuels treatments such as grapple pile, hand pile, and prescribed fire. The proposed action also includes temporary road construction, road reconstruction, and road maintenance. Activities in alternative 2 that would have a negligible effect and are not discussed further.

Project Design Features and Mitigation Measures

Required mitigation measures that would decrease the effects of project activities include seeding disturbed ground the fall or spring after activities are completed, cleaning equipment before entering the project area, and avoiding work in weed sites, especially when plants are fruiting. EDRR of discovered infestations would be implemented in concert with the required post completion monitoring.

Required Monitoring

Required mitigation and monitoring includes the seven prevention and management standards and EDRR monitoring items listed above that will diminish the potential effects of the activities.

Direct and Indirect Effects - Alternative 2

While effects of fuels reduction/vegetation management projects on invasive species are difficult to predict and quantify and may change depending on duration and extent of activity and disturbance, certain associated activities may affect different species in a different manner. For example, the effects of prescribed fire and pre-commercial thinning can vary depending on the specific technique and the timing of the activity. Prescribed burning can affect the invasive plants differently depending on the time of occurrence. Fall burning has been shown to increase (although not significantly) the number of native species when compared to spring burning, while spring burning tends towards a decrease in the number of invasives (Potts & Stephens, 2009). Effects of thinning treatments also depend on the timing as well as the type of activity. Heavy equipment use has the largest possibility of disturbing soil and introducing plant material to an area, while low impact mechanical thinning by way of mastication has the lowest chance. Timing of mastication, however, can affect the invasive plants differently. Spring thinning by mastication could result in decreased invasive introductions when compared to similar activities in the fall. Interestingly, thinning by hand crews has a slightly increased chance of negative effects. This generally occurs through a larger reduction of cover than compared to mastication treatments (Merriam, et al., 2006; Potts & Stephens, 2009). Timing of activities within this project should consider these variable effects.

Road use (including use and construction of temporary roads) can create situations that favor the spread of invasive plants by disturbing roadsides and carrying seeds to un-infested areas. Use and construction of temporary roads can allow the easy spread of invasive plants to previously un-infested areas. The risk associated with road use and invasive species will increase as miles of temporary road use and construction increases. Exact estimates of this risk, however, are unknown and difficult to predict. Implementation of the Project Design Criteria for invasive species proposed in this alternative would ensure that spread of invasive species would be expediently managed through integrated treatments.

Resource Indicator and Measure 1- Potential to establish

Establishment potential of invasive species as a result of project activities would occur by the movement of invasive species materials on project personnel and equipment. As the number of acres of total treatment increases, the amount of personnel and equipment increases, thus the risk of invasive species establishment also increases. Alternative 2 proposes 265 more acres of non-commercial thinning and commercial treatment than alternative 3, all of which are in riparian areas. All of these activities have a potential to increase the risk of introducing new invasive species or new invasive species sites. The riparian treatment proposed also have the potential to increase establishment of invasive species, but due to the equipment exclusion this would generally occur only in those areas that have little to no understory cover. These areas are at risk for introduction of invasives, not due to ground disturbance, but due to lack of competition from existing native vegetation.

However, with project activities that are designed to reduce fuel loading within the project area, indirect effects in terms of a reduction in the risk of establishment may exist. This benefit is due in part to the decreased fuel loading and decreased risk of large-scale wildfire that will result from this vegetation management project. With a decrease in wildfire potential, there would be a reduced need of suppression activity which could indirectly lower the opportunity for the transportation of invasive species material and thus the establishment of new invasive species and sites within the project area.

The overall effect intensity of this alternative on the potential to establish invasive species is estimated to be **Moderate**, due to the area of proposed activity but the large number of acres proposed for fuels reduction and the subsequent decrease in wildfire risk.

Resource Indicator and Measure 2 – Potential to spread

Direct effects to the spread potential of invasive species due to project activities would occur due to movement of invasive species materials on project personnel and equipment combined with ground disturbance because of project activities. As the number of acres of total treatment (more potential disturbance and more movement of project equipment) the total acres of invasive species (more propagule pressure) increases; the risk of invasive species spread also increases. Prescribed fire, non-commercial thinning, commercial treatment, temporary road construction, and road reconstruction activities have a potential to increase the risk of spreading invasive species beyond the current extent of known sites.

However, with the goal of fuel load reduction, indirect effects in terms of a reduction in the risk of spread may exist. This benefit is due, in part, to the decreased fuel loading and reduced risk of large-scale wildfire that will result from this vegetation management project. With a lowered risk of wildfire potential, there would be a decrease in the amount of potential ground disturbance from the fire and a decrease in suppression activity. These decreases would reduce the potential "invasibility" of the area due to wildfire activity and decrease the opportunity for the transportation of invasive species material on personnel and equipment used for suppression activity. Thus, the spread of existing invasive species beyond their current extent would also be reduced.

The overall effect intensity of this alternative on the potential to spread invasive species is estimated to be **Moderate**, due to the increased area of proposed activity and ground disturbance but the potential decrease in risk of large-scale wildfire.

Table 4. Resource indicators and measures for alternative 2 direct/indirect effects

Resource Element	Resource Indicator	Measure	Alternative 2 Direct/Indirect Effects
Ground disturbance	potential to establish	21,879 acres of ground based logging	Moderate
Ground disturbance	potential to establish	43 miles temporary roads 0.5 miles draw bottom road relocated.	Moderate
Invasive seed source	potential to spread	1100 acres of invasive plant inventory in project area	Moderate
Ground disturbance	potential to establish	8,802 acres of mechanical treatments/ thinning	Moderate
Ground disturbance/ competition disruption	potential to establish	36,032 acres of prescribed burning	Moderate
Ground disturbance	potential to establish	Number of piles/acres associated with 8,802 mechanical acres thinning plus 21,879 acres harvest.	Moderate

Cumulative Effects – Alternative 2

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Generally, the risk of large-scale wildfire combined with unregulated travel, road use, private land activities, and grazing has the greatest chance for cumulative effects on invasive plants within the watershed area. However, predicting wildfire occurrence is problematic. Large-scale and intense wildfire disturbance would create ideal areas for the introduction and spread of invasive plants. With increasing numbers of wildfires the numbers of invasive species could increase (Merriam, et al., 2006), with the largest increases found in those areas with pre-existing invasive plant populations. One benefit of this project is the decrease of current fuel loading and therefore the risks of uncontrolled wildfire, so future large-scale burns should be reduced. This reduction may further decrease the risk for areas outside of the treatment area boundaries (Merriam, et al., 2006).

Of the activities with predictable timetables, the effects of activities of this alternative (increased risk of ground disturbance, transportation of invasive plant materials, and reduction in competition) coupled with road maintenance, private land activities, and grazing have the highest possibility of detrimental cumulative effects within the watershed. Roads are a vector of weed spread and transport, thus unregulated road use, construction of temporary roads, and re-opening of previously closed roads increases this risk. Travel management decisions (expected in the future on this forest) should reduce this risk by ending unregulated road use and cross-country vehicle traffic. Further, the immediate closure and restoration of temporary and closed roads after project use will reduce the risk to invasive species. Grazing could also increase the risk of spread and introduction of invasive species. Livestock are vectors of plant material and can transport seeds and other plant reproductive material over many miles. Another unknown factor is the large amount of disconnected private land holdings inside the project area boundary. The invasive plant management practices on these lands is outside the knowledge and authority of the USFS.

Resource Indicator and Measure 1- Potential to establish

Ground disturbance that would occur in concert with that resulting from project activities would be caused by grazing, OHV travel, irrigation ditch maintenance, road maintenance, and unknown activities

on private land. The combined effects of these areas of ground disturbance would have a **Moderate** cumulative effect over the effected watershed being considered. Active invasive plant monitoring and treatment would mitigate these effects on USFS land. Private land invasive plant management within the area being considered is unknown.

Resource Indicator and Measure 2 – Potential to spread

The existence of invasive plant sites in analysis combined with human, machinery, and animal movement are means of the potential for the spread of invasive plants due to project activities. Grazing, OHV travel, road travel and maintenance, and travel through private land are factors contributing to these phenomena. In addition, invasive plant spread into RHCAs compounds their spread by facilitating the dispersion of seed downstream through water movement.

Table 5. Resource indicators and measures for alternatives 2 and 3 cumulative effects

Resource Element	Resource Indicator	Measure /Project	Alternatives 2 and 3 Cumulative Effects
Invasive seed source	potential to spread (decreased)	Noxious Weed Management	Reduces the extent and amount of invasive plant sites throughout the project area through on-going treatments of existing invasive populations.
Ground disturbance, movement, and introduction of invasive plant material	potential to establish and spread	Recreation – OHV Use	Unregulated use of off highway vehicles poses a risk to the establishment and spread of invasive species due to the movement of plant material on equipment and the ability to introduce these materials to random areas that are difficult to identify for treatment. Re-opening roads and opening up stands with fuel reduction treatments in the Patrick project increases the potential for introduction and spread of invasive plant material.
Decreased ground disturbance, movement, and introduction of invasive plant material	potential to establish and spread (decreased)	Roads & Trails – Travel Management Plan	Designating roads, trails and areas has the potential improve the compliance with the Patrick post-sale road management plan because use will only be allowed on designated roads and trails. Limiting this use will minimize the potential introduction and spread of noxious weeds.

Ground disturbance or transportation of non-native plant material	potential to establish and spread	Special Uses - Irrigation Ditches	Maintenance and repair of most Special use facilities can create situations that favor the establishment and spread of invasive plants by disturbing ground and carrying seeds to un-infested areas. Regional standards along with noxious weed requirements which are part of the special use permits would help to reduce the risk of this potential effect. Patrick project activities overlap many of these sites and would increase the potential for spread of invasive species.
Ground disturbance or transportation of non-native plant material	potential to establish and spread	Grazing Allotments	Cattle are vectors for invasive plant seeds. Opening up the forest with fuel reduction practices along with creating seed beds through ground disturbance increases the potential for cattle to transport noxious weed seeds into new areas and increase spread
Equipment and materials travelling on road systems shared by project	potential to establish and spread	Private Land Activities	Potential for weed seeds to be carried from private land which may not have an active invasive plant management program to locations that intersect with project activities

Alternative 3 – No RHCA Vegetation Treatments

This alternative has the same activities as alternative 2 that would potentially affect invasive plants. The exceptions are that the harvest and machine thinning activities within RHCAs would be eliminated. The most significant comparison of the action alternatives in this report regards the elimination of 265 acres of ground-based vegetation treatment using machinery in alternative 3.

Project Design Features and Mitigation Measures

The same mitigations would be practiced as in alternative 2.

Required Monitoring

The same monitoring would be required as in alternative 2.

Direct and Indirect Effects - Alternative 3

Similar direct and indirect effects would be expected for alternative 3. The elimination of riparian area harvest and thinning would decrease the level of effects in relation to the 265 fewer acres of ground disturbance. There is also a slight reduction of invasive plant spread in this alternative due to the elimination of the overstory removal in the 4,212 total acres of RHCA not being treated/thinned.

Resource Indicator and Measure 1- Potential to establish

The cumulative effects on the potential to establish for this alternative are estimated to be less than those in alternative 2 due to the decrease in the correlated acres of ground disturbance.

Resource Indicator and Measure 2 – Potential to spread

The potential to spread is estimated to be less due to the lack of entry into RHCAs. The elimination of RHCA vegetation treatments would mitigate the compounded spread potential by the dispersion of seed through downstream water movement. However, the inclusion of prescribed burn activities in this alternative would cause some potential for spread into RHCAs.

Cumulative Effects – Alternative 3

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

The cumulative effects of project activities under alternative 3 will occur in a similar fashion to alternative 2. However, since there is less treatment proposed there should be a reduced risk of cumulative effects. The reduced risk to invasive non-native species is only due to the reduction in disturbance and introduction events that are expected with the elimination of RHCA vegetation treatment activities.

Resource Indicator and Measure 1- Potential to establish

The cumulative effects on the potential to establish for this alternative are estimated to be less than those in alternative 2 due to the decrease in the correlated acres of ground disturbance.

Resource Indicator and Measure 2 – Potential to spread

The potential to spread is estimated to be less due to the lack of entry into RHCAs to perform vegetation treatments. The elimination of these treatments would mitigate the compounded potential to spread by the dispersion of seed through downstream water movement. However, the inclusion of prescribed burn activities in this alternative would cause some potential for spread into RHCAs.

Table 6. Resource indicators and measures for alternative 3 direct/indirect effects

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 2 Direct/Indirect Effects
Ground disturbance	potential to establish	21,614 acres of ground-based logging	Moderate
Ground disturbance	potential to establish	43 miles temporary roads 0.5 miles draw bottom road relocated.	Moderate
Invasive seed source	potential to spread	1100 acres of invasive plant inventory in project area	Moderate
Ground disturbance	potential to establish	8,802 acres of mechanical treatments	Moderate
Ground disturbance/ competition disruption	potential to establish	36,032 acres of prescribed burning	Moderate
Ground disturbance	potential to establish	Number of piles/acres associated with 8,802 acres thinning plus 21,614 acres harvest	Moderate

Summary

Table 7 summarize the bottom-line conclusions of this analysis for each alternative. The differences between the indicator measurements are summed up in Table 8. The relevant differences between the action alternatives relate to the elimination of vegetation treatments utilizing machinery in RHCAs.

Summary of Environmental Effects

As stated earlier, alternative 1 will have no direct effects from project activities within the project boundary. The risk of a stand replacing large-scale wildfire is increased due to increased fuel loading, and the potential for invasive species spread and establishment would increase beyond the rate found naturally. This effect, plus continuing risks from other types of activities occurring in the analysis area, would favor the expansion of invasive species within the project area to levels beyond that found without large-scale wildfire activity.

Table 7. Estimated comparison of environmental effects to invasive plants

Estimated Effect*	Alt. 1 No-Action	Alt. 2 Proposed Action	Alt. 3 No RHCA Veg. Trt.
Potential to establish	4	3	2
Potential to spread	4	3	2

* Estimated effect is based on increases (from pre-project levels) in establishment and spread of invasive species due to project level activities or their lack under alternative 1. Higher number equates to higher risk but is only used for comparison between alternatives and is not an estimate of the intensity of the effect.

Although risks are present with or without project activities, the danger of invasive species establishment due to project activities under alternatives 2 and 3 is increased (although slightly lower under alternative 3). However, the potential to spread invasive species under either of the action alternatives is likely less than under the no action. This is due in large part to the reduction in wildfire risk associated with the action alternatives (slightly more risk under alternative 3 due to a smaller reduction in overall fuel loading). With implementation of project design features to reduce and control the introduction and spread of invasive species we can minimize the impacts that do exist. Specific mitigations and required standards would continue to reduce the chances of new introductions, spread, and establishment of invasive plants and we could predict a spread and establishment rate at the natural level for either of the action alternatives.

Table 8. Summary comparison of proposed activities and resultant environmental effects to invasive plants

Resource Element	Indicator/Measure	Alt 1	Alt 2	Alt 3
potential to establish	Acres of ground-based logging	No logging would take place. MODERATE EFFECT– related to fuel loading risk vs. maturing seral stage of stand	21,879 acres MODERATE EFFECT	21,614 acres MODERATE EFFECT – slightly less than alt 2
potential to establish	Miles of temporary roads	No temporary roads would be built. Draw bottom road would not be relocated. NO EFFECT	43 miles temporary roads 0.5 miles draw bottom road relocated MODERATE EFFECT	43 miles temporary roads 0.5 miles draw bottom road relocated MODERATE EFFECT

Resource Element	Indicator/Measure	Alt 1	Alt 2	Alt 3
potential to spread	Acres of invasive plant inventory in unit	1100 acres of invasive plants exist in units. These would be treated systematically and reduced over time until natural wildfire comes through. MODERATE EFFECT	1100 acres MODERATE EFFECT	1100 acres MODERATE EFFECT
potential to establish	Acres of mechanical non-commercial thinning treatments	No mechanical non-commercial thinning treatment would take place. HIGH EFFECT – related to fuel loading	8,802 acres MODERATE EFFECT	8,802 acres MODERATE EFFECT
potential to establish	Acres of prescribed burning	No prescribed burning would take place. HIGH – related to fuel loading	36,032 acres MODERATE EFFECT	36,032 acres MODERATE EFFECT
potential to establish	Acres of grapple/landing pile burning	No pile burning would take place. NO EFFECT	Amount of piles/acres associated with 8,802 acres thinning plus 21,879 acres harvest MODERATE EFFECT	Amount of piles/acres associated with 8,802 acres thinning plus 21,614 acres harvest MODERATE EFFECT– slightly less than alt 2

Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans

The Forest Plan (as amended by the 2005 Region 6 ROD, amendment RF #5) provides direction for the control of noxious weeds and other competing vegetation where such activities are not precluded by management area direction. The goals focus on maintaining or enhancing ecosystem function to provide for long-term integrity and productivity of biological communities, treatment of priority infestations, and monitoring the effects of all activities to reduce the impacts of invasive plants. The site specific treatment requirements are further amended by the Wallowa-Whitman National Forest Invasive Plant Treatment Program EIS (USDA, 2010). The Patrick Project is consistent with these goals through adherence to the EIS and the Forest Plan.

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